

REMARKS

Claims 72-75 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 72 and 73 are rejected under 35 U.S.C. § 102(b) as being anticipated by the references Boie (*Synthesis*), O'Donnell (*Tetrahed. Asymmetry*), Crisp (*Tetrahed. Lett.*) and Sames (*J. Org. Chem.*). Claims 72 and 73 are additionally rejected under 35 U.S.C. § 102(b) as being anticipated by compounds RN 161300-04-5 (Compound no. 17 disclosed in *Monatshefte fur Chemie*, vol. 125 (11), page 1160, 1994); RN 126385-60-2 (Compound no. 6d disclosed in *Tetrahedr. Lett.* Vol. 30(30) page 3964, 1989); and RN 31025-83-9 (Compound no. 32 disclosed in *J. Economic Entomology*, Vol. 63(6) page 1859, 1970) when R₁ and R₂ are either alkyl or phenyl groups in the instant compounds of claim 72. Claims 72-75 are rejected under 35 U.S.C. § 102(a) as being anticipated by compound RN 352311-16-1 (disclosed in *Organic Lett.* Vol. 3 (13) pages 2045-2048, 2001). Claims 72-75 stand rejected under 35 U.S.C. § 101 for lack of utility.

Claims 72-75 and 35 U.S.C. § 112, Second Paragraph

Claims 72-75 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Specifically, the Examiner states that the term heteroaryl is so broad that it encompasses heteroaryl rings which are not even enabled by the instant specification. Similarly, the Examiner states that the term hydrocarbyl is very broad and encompasses groups which are not enabled by the present specification. Applicants respectfully traverse the present rejection.

Breadth of a claim is not to be equated with indefiniteness.¹ If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise

¹ *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971).

indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. § 112, second paragraph.²

Applicants respectfully submit that the scope of the subject matter embraced by the claims is clear. The term heteroaryl ring is defined in paragraph [0042] in the specification. A heteroaryl group is defined as comprising 5- to 7-membered monocyclic or bicyclic or 7- to 10-membered bicyclic heterocyclic rings. The degree of saturation ranges from saturated, partially unsaturated, or unsaturated (aromatic). The number and type of heteroatoms present in the ring ranges from 1 to 4 heteroatoms independently selected from the group consisting of N, O and S, wherein the nitrogen and sulfur heteroatoms may optionally be oxidized. Applicants respectfully submit that one skilled in the art would be able to determine whether a compound included a heteroaryl group as described in claim 72, and therefore, claim 72 satisfies the requirement that the claims must particularly point out and distinctly claim the invention.

Further, the term --hydrocarbyl-- is not indefinite. The term hydrocarbyl is defined in paragraph [0038] in the specification. A hydrocarbyl group is a group that contains only carbon and hydrogen atoms. Hydrocarbyl groups include linear, branched, and cyclic hydrocarbons. Applicants respectfully submit that one skilled in the art would be able to determine whether a compound included a hydrocarbyl group as described in claim 72, and therefore, the claim satisfies the requirement that the claims must particularly point out and distinctly claim the invention. Additionally, Applicants have given no indication that they believe the invention to be of a scope different from that defined in the claims.³ As a result, Applicants respectfully submit that claims 72-75 are definite and respectfully request that the Examiner withdraw the present rejection.

Claims 72 and 73 and 35 U.S.C. § 102(b)

² Manual of Patent Examining Procedure § 2173.04

³ See Response to Office Action mailed April 27, 2004.

Claims 72 and 73 are rejected under 35 U.S.C. § 102(b) as being anticipated by Boie, O'Donnell, Crisp, and Sames in addition to several compounds located in Chemical Abstracts. Applicants respectfully traverse the present rejection.

In the rejection, the Examiner states that compound no. 10 in Boie anticipates the present claims when both R_1 and R_2 represent phenyl groups. Claims 72-75 are directed to a free radical intermediate comprising an sp^2 hybridized radical carbon. Compound no. 10 in Boie is not a free radical as every atom in the compound exhibits paired electrons. A free radical intermediate comprises an atom with an unpaired electron as illustrated by the sp^2 hybridized carbon in the chemical structure of claim 72. Due to the potential instability of the unpaired electron, a free radical intermediate may be highly reactive. In an electron deficient environment, for example, a free radical intermediate seeks to stabilize the unpaired electron in a bonding orbital by reacting with another chemical species.

The sp^2 hybridized carbon in the *El* group of compound no. 10 has paired electrons and is not considered to be a free radical intermediate. The sp^2 hybridized carbon displays a stable electronic configuration as three of its electrons reside in sigma bonding orbitals and the remaining electron resides in a pi bonding orbital. By having all valence electrons in bonding orbitals, the sp^2 hybridized carbon of compound no. 10 is not a free radical. In failing to recite or disclose a free radical intermediate, Applicants respectfully assert that Boie does not anticipate claims 72 and 73 of the present application.

The Examiner additionally states that compounds disclosed in O'Donnell, Crisp, and Sames anticipate the free radical intermediate of claims 72 and 73. Applicants respectfully assert that the compounds disclosed in these references are not free radicals as they do not exhibit any atoms with unpaired electrons. For reasons consistent with those delineated in the discussion of the Boie reference, Applicants respectfully assert that the compounds disclosed in O'Donnell, Crisp, and Sames do not anticipate the free radical intermediate of claims 72 and 73.

Furthermore, the Examiner states that claims 72 and 73 are anticipated by compounds RN 161300-04-05, RN 126385-60-2, RN 31025-83-9 when R_1 and R_2 represent either alkyl or phenyl groups in the instant compounds. These compounds are

not free radical intermediates as all the atoms in the compounds display paired electrons. For reasons consistent with those delineated in the discussion of the Boie reference, Applicants respectfully assert that claims 72 and 73 are not anticipated by the present compounds and respectfully request the Examiner to withdraw the rejection.

Claims 72-75 and 35 U.S.C. § 102(b)

Claims 72-75 are rejected under 35 U.S.C. § 102(a) as being anticipated by compound RN 352311-16-1 when both R_1 and R_2 represent methyl groups and n represents 0. Applicants respectfully traverse this rejection.

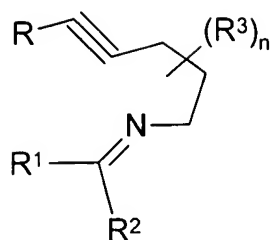
Compound RN 352311-16-1 is not considered to be a free radical intermediate as all the atoms in the compound display paired electrons. For reasons consistent with those discussed in the rejection of claims 72 and 73 under § 102(b), Applicants respectfully assert that claims 72-75 are not anticipated by compound RN 352311-16-1 and respectfully request that the Examiner withdraw the rejection.

Claims 72-75 and 35 U.S.C. § 101

Claims 72-75 are rejected under 35 U.S.C. § 101 since the disclosed invention is inoperative and, therefore, lacks utility. The Examiner states that there is no teaching in specification that the instant intermediates can actually be prepared and isolated. Applicant respectfully traverses the present rejection.

The specification provides a utility for the free radical intermediate of claims 72-75. In particular, the specification recites that the free radical intermediate is useful for preparation of various pyrrolidine compounds, such as derivatives of the amino acid proline.⁴ In furtherance of this recited utility, the specification provides methods for preparing a free radical intermediate of claims 72-75. The specification discloses that a free radical of claims 72-75 can be prepared by contacting a compound of the formula

⁴ Specification, page 3, paragraph [0009].



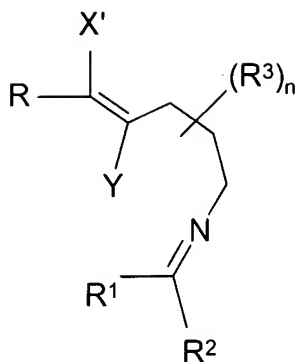
with a free radical initiator in the presence of a hydrogen atom donor.⁵ The term “free radical initiator” is defined in paragraph [0007] as being any compound which is capable of facilitation of a free radical reaction via homolytic mechanism. Examples include azonitrile compounds such as 2, 2'-azobisisobutyronitrile (AIBN), peroxides, and the like.⁶ Moreover, “a hydrogen atom donor” is defined in paragraph [0008] of the specification. Examples of suitable hydrogen donor compounds include organostannane hydrides, organosilyl silanes, organogermanium hydrides, 1,4-cyclohexadiene, γ -terpinene, thiols, selenol, and the like. Examples of organostannane hydrides include compounds of the Formula (X')₃Sn-H, wherein X' is an alkyl group, preferably a C₁-C₆ alkyl group, aryl group, or a fluorine derivative thereof. Alternatively, such a compound can be generated *in situ*; for example, hexamethylditin can be photolyzed to provide the same tin radical as tri-n-butyl tin hydride plus a free radical initiator compound. Examples of alkylsilylsilanes include tris(trimethylsilyl)silane, triethylsilane, and the like.⁷

The specification additionally provides that a free radical intermediate of claims 72-75 can be prepared by contacting a compound of the formula

⁵ Specification, page 4-5, paragraph [0010].

⁶ Specification, page 3, paragraph [0008].

⁷ Specification, page 3, paragraph [008].



with a free radical initiator in the presence of a hydrogen atom donor, wherein Y is a radical leaving group, and X' is a group selected from C₁ – C₆ alkyl, aryl, or a fluororous derivative thereof. Furthermore, Applicants respectfully assert that methods of preparing free radical intermediates are well known to one of ordinary skill in the art as free radical intermediates play important roles in polymer production and numerous organometallic processes.


Additionally, Applicants respectfully assert that isolation of the free radical intermediate is not required in order for the present invention to be operable and demonstrate a utility. In view of the foregoing arguments, Applicants respectfully assert that the present invention is compliant with § 101 and respectfully request that the Examiner withdraw the present rejection.

CONCLUSION

For the foregoing reasons, an allowance of all the claims is respectfully submitted. The Examiner is respectfully invited to contact J. Clinton Wimbish at (336) 607-7399 to discuss any matter relating to this application.

Respectfully submitted,

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